

ADOSH ADVOCATE

Improving Workplace Safety and Health



<http://www.ica.state.az.us>

Darin Perkins, Director

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In This Issue

What's The Hazard?

Mark Norton
Page 1

Tailgate Safety Meetings

Carlos Rodriguez
Page 2

Yuma County Safety Exposition

Page 2

Driving Safety

Page 3

Fatal Mistakes

Ernie Miller
Page 4

Training Calender

Page 5

Occupational Fatalities Investigated

Page 6

ADOSH ADVOCATE

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What's The Hazard?

Ok, I can hear several of you laughing as you read this, especially those of you who know me or have had occasion to ask me questions regarding some of those off-the-wall safety scenarios we as safety professionals run into from time to time. I am a big proponent of the phrase, "What's the hazard?" Let's face it, if we can identify the hazard we can usually come up with a solution, right? Every once in a while I get a question where there may not be a hazard per se, but the condition is still a violation of OSHA or some other regulation such as the NEC. That's what I want to discuss in this article.

Recently, one of the consultants was discussing the issue of electrical cords and the replacement of plugs on cords.

Specifically, he ran into an employer who was in the process of cutting the two-wire, manufacturer's plug from the power supply cord of a double-insulated tool and replacing that plug with a three-wire, twist-lock plug. When the consultant told him this was wrong, the company safety rep countered with an interpretation dated 19 May, 2003, from federal OSHA. The safety representative stated the interpretation allowed this to be done because the initial grounding of the double-insulated tool was not being altered.

The interpretation specifies that repairs of double-insulated tools are permitted as long as they are done in a competent manner and using parts that are "at least equivalent to those used

in the original tool." Specifically, it states, "for example, as long as the replacement plug is an approved item." In another area the interpretation states the "repair would have to restore the tool to its approved condition in accordance with 1926.403(a)."

In the scenario described above, we are finding that employers are replacing the two-wire plug with a three-wire plug. I can hear the



wheels turning, "Norton, wait! There is no hazard; the tool is still double insulated." Such statements may not be correct. We are assuming that the cord was repaired by someone who knew what they were doing. But what

about that three-wire, twist-lock plug assembly? Is it approved for such a use? The one given to us was a Hubbell 4720C twist lock which, according to the manufacturer, has one neutral, one hot, and one ground wire, and is UL approved for use with three-wire, round, flexible cord. The cord on the double-insulated tool is only two-wire, so that would indicate that the plug's use with this cord is not in accordance with its UL approval. Are you starting to see the pattern?

I have also discussed this issue with Makita, who clearly stated in a letter to me that this is not allowed and is in violation of the warranty as well as the NEC. I spoke with the

Tailgate Safety Meetings

manager of their Regulatory and Compliance Division, and he stated: "Makita does not permit the mounting of a three-prong, grounded type plug on a double-insulated tool". He further explained that NEC 406.9 (E) states "Grounding-type attachment plugs shall be used only with a cord having an equipment grounding conductor. Since a double-insulated tool is not provided with an equipment grounding conductor the use of a grounding type plug on the tool is prohibited".

When posed the same question, the Power Tool Institute also indicated that UL tools should not be modified.

In speaking to the technical service representatives for Dewalt I was told they also do not allow this practice and if anyone brings tools in and asks for this to be done they will refuse as it can create an unsafe condition if not done correctly. They also explained it is in direct violation of the tool's original UL approval and voids the warranty.

In summary, the question is not, what's the hazard, but rather, is it allowed? The short answer is no. The tool is approved as an entire unit when receiving its UL rating or approval. 1926.403(b)(2) states: "Listed, labeled, or certified equipment shall be *installed* and *used in accordance* with instructions included in the listing, labeling or certification."

The replacement of a two-prong plug with a three-prong, plug is a modification of the tool which is not in accordance with the UL approval and which will void the warranty of the tool as well. That may come back to haunt you in the event of an accident or injury or even an ADOSH inspection.

Mark Norton, Assistant Director

During compliance and consultation activities, I've often been asked for information about tailgate meetings. I believe that tailgate/toolbox meetings have a place in an employer's overall safety and health program and can improve employees' awareness of workplace hazards and help prevent accidents, injuries and illnesses.

Tailgate meetings should last 10-15 minutes on subjects that are specific to the tasks that the employees perform. Tailgate safety meetings should also address the actual problems experienced on the jobsite or in the production area. The supervisor should lead workers in drawing on their experience and use this experience in reminding all employees, including new hires, of the dangers that are present in the workplace. Participation by the employee during the meetings builds their confidence and allows the employee to buy into the safety program.

You might want to discuss an accident or near-miss that occurred. Leading questions can help obtain employee participation. Ask if they know what happened? Where did the accident occur? What were the contributing factors? How can it be prevented in the future? This type of meeting presents a good opportunity to discuss hazards that are inherent in employees' work and that experienced employees are likely to take for granted. They get employees to think about safety and encourage them to come up with ideas and suggestions for preventing accidents and minimizing hazards with which they are most familiar.

When conducting the meeting, hold it in the employees' work area. Employees are more comfortable in familiar surroundings. Conduct the meeting prior to the start of work if you need to discuss a new procedure or change the work process. Be prepared by researching the subject. You might want to make copies of a document for the employees to review. Make note of the date and

time of the meeting, as well as the personnel in attendance, subjects discussed and corrective actions taken, if any.

There is no standard method for conducting a tailgate safety meeting. They

can be formal or informal and can cover a variety of topics. Safety meetings that are relevant to the work process of the employees will help keep the awareness of safety issues in the forefront. Your employees will know that safety is important and they will be able to help carry that message throughout the workplace.

Carlos Rodriguez,
Safety Consultant



Yuma Safety Exposition

The City of Yuma and State Compensation Fund are planning their annual *Yuma County Safety Exposition* for November 17th and 18th. The exposition provides area employers with an excellent opportunity to obtain information on a variety of safety and health topics. Contact Bill Denman at 928-373-5000 or Diane Robinson at 928-539-5405 for additional information.

Driving Safety

Traffic accidents are one of our nation's most pressing safety and health issues. In 2002, on-the-job motor vehicle accidents cost 1,372 American workers their lives-25 percent of all work-related deaths. Nationally, an accident occurs every five seconds. There is a traffic-related injury every ten seconds and someone is killed every 12 minutes. In 2003, there were 42,643 fatal traffic accidents in the U.S.

The single best proven way to bring traffic deaths and serious injuries down is to increase the use of seat belts. In highway traffic accidents, wearing a seat belt can reduce the risk of death by 45 to 60 percent, according to the National Highway Traffic Safety Administration (NHTSA).

In the general population, use of safety belts saved nearly 12,000 lives in motor vehicle crashes in 2000 and could have prevented an additional 9,000 fatalities had the victims been wearing safety belts, according to NHTSA estimates. Belt use also prevented almost 325,000 moderate to severe injuries in 2000 and could have prevented another 143,000 such injuries had the victims been wearing safety belts, NHTSA also estimated. Although these estimates apply to accidents in the general population, it is likely that safety belts would be equally effective in preventing work-related injuries and fatalities.

Employer Responsibility

Preventing work related roadway accidents requires strategies that combine traffic safety principles and sound safety management practices. Although employers cannot control roadway conditions, they can promote safe driving behavior by

providing safety information to workers and by setting and enforcing driver safety policies.

Accidents are not an unavoidable part of doing business. Injuries resulting from non-use of safety belts are estimated by NHTSA to cost employers more than \$1 billion each year in health insurance and other direct costs. For every employee involved in an on-the-job accident, the direct cost to the employer averaged \$27,750 if the employee was not wearing a safety



belt, compared with \$11,310 if the employee was wearing a safety belt. Isn't it time for your business or organization to get involved in reducing the number of lives lost on our nation's highways?

The National Institute for Occupational Safety and Health (NIOSH) recommends that employers establish and enforce workplace driver safety policies as a key step in preventing job-related fatalities in motor vehicle accidents. As part of a driver safety program, NIOSH recommends that employers do the following:

1) Provide a key member of the management team with responsibility and authority to set and enforce a comprehensive driver safety policy.

2) Require use of seat belts by all persons in a vehicle used on the job.

3) Select vehicles that provide high levels of occupant protection.

4) Maintain complete and accurate records of driving performance.

5) Stipulate that driving is a task that requires full attention, including instructions to avoid placing or taking cell phone calls while the vehicle is in operation.

6) Set schedules that allow adequate time for employees to make deliveries or visit clients without violating traffic laws or safety rules.

7) Ensure that employees are properly licensed and trained to operate the vehicle they are assigned.

8) Implement a vehicle maintenance program that includes pre-trip inspections, immediate withdrawal from service of any vehicle with mechanical defects, and regularly scheduled withdrawal of vehicles for comprehensive inspection and maintenance.

Some suggestions for training programs include:

1) Initial orientation at the time of hire for all employees who drive on company business;

2) Periodic and regularly scheduled training to update and refine driving skills using effective and practical methods such as classroom, behind-the-wheel and one-on-one training techniques;

3) Immediate remedial training for drivers who have accumulated a company-determined level of moving violations or crashes; and

(Continued Page 4)

ADOSH ADVOCATE

4) Routine communication of safety information and accident results to all drivers.

Resources

The Governor's Office of Highway Safety is responsible for developing,

promoting and coordinating programs affecting highway safety in Arizona. Their web site is www.azgohs.state.az.us.

The National Highway Traffic Safety Administration (NHTSA) is

also a good resource. NHTSA is responsible for reducing deaths, injuries and economic losses resulting from motor vehicle accidents. This is accomplished by setting and enforcing safety performance stan-
(Continued page 6)

Fatal Mistakes

When dealing with a tank that once held a flammable liquid, never assume that it is empty, even after you have "purged" the tank. Your assumption could be the last thing you do.

A small company had been purchasing empty gasoline storage tanks from defunct gasoline stations and other sources, then welding a fill nozzle to them and installing them underground as a water reservoir for remote live-stock water locations. These tanks were 10' diameter by 28' long cylinders made of welded steel plate. The tanks were laid on the ground surface with no bracing or stabilization. Several tanks had been "purged" by creating a small vent hole in the side of the tank then inserting a wick made of cotton cloth into the tank with a small quantity of gasoline, then soaking the entire wick in gasoline and placing the end of the wick on the ground. From the end of the wick, a gasoline fuse trail was poured to a "safe" distance from the tank. A cigarette lighter or match was used to ignite the fuse trail. After lighting the trail, the employees ducked behind whatever object they were near and waited for the "popping" sounds to stop.

In spite of the terrible ignorance exhibited by these employees, they were performing a highly technical task. When the first flame entered the tank, the atmosphere immediately around the vent hole had a concentration of explosive vapors that was between the upper and lower explosive limits for the fuel in the tank, thus allowing a limited explosion. Following this small explosion more air came into the hole. Again, the mixture reached the magic level between the UEL and LEL. "Pop", another small explosion. This continued until there was no more propagation of vapors and there was a rush of smoke and hot air out of the vent hole. At that point, the tank was judged to be safe to torch cut, weld and grind. In fact, this had proven to be the case on several tanks in the past.

On the last tank to be purged, the procedure was followed as described. There was an unknown variable not previously involved. Maybe it was simply that one employee could not find his lighter and took some extra time to light the "fuse", allowing additional oxygen into the tank, creating a much larger pool of vapors in the magic explosive range. The variable will never be known.

The fuse (gasoline trail) was set fire, after some abnormal delay. Two employees took cover behind a tree. One employee, carrying the five gallon gas container walked toward his truck, perhaps to replace the container in the bed of the truck. A huge explosion removed the 10' diameter end of the tank and sent it flying toward the employee walking to his truck. The cover was followed by a huge blast of flame. Both the cover and the flame hit the employee. The cover was found 100' from the tank. The employee was only 30' from the tank. The gasoline container the employee was carrying exploded on impact. The employee was pronounced dead at the site from massive blunt force trauma and large incidental burns that would also have been life threatening.

None of the people involved had received any training in disposal of old gasoline tanks and none had received any safety training prior to this fatal accident. No one involved with this fatal mistake knew of, or understood the theory of upper and lower explosive limits of flammable liquids. No one realized how precarious was the balance of mixtures required to achieve the small "pop, pop, pop" type of purge they had accidentally achieved for the first several tanks they purged with this method. They simply lost control of a system that they did not know how to control.

Failure to understand and control an explosive system to the fullest can be a very dramatic, fatal mistake.

Ernie Miller, Safety Consultant

ADOSH Education and Training Calendar

Registration for each class begins 30 days prior to the date of the class. Location and time will be provided at the time of registration. ADOSH classes are free of charge but are subject to change or cancellation without notice.

Date	Class	Location	Trainer	Phone number
October 4	Hand & Power Tool Safety	Prescott	Joe Gates	602-542-1641
October 5	Lockout/Tagout	Tucson	Tom Webb	520-628-5478
October 6	Lockout/Tagout	Avondale	Joe Gates	602-542-1641
October 7	Back Injury Prevention	Cottonwood	Fernando Mendieta	602-542-1640
October 11	Hand & Power Tool Safety	Tucson	Mark Norton	520-628-5478
October 12	Hazard Communication	Tucson	Bill Garton	520-628-5478
October 12	Bloodborne Pathogens	Phoenix	Fernando Mendieta	602-542-1640
October 12	Fall Protection	Phoenix	Joe Gates	602-542-1641
October 13	Excavation Safety Awareness	Tucson	Carlos Rodriguez	520-628-5478
October 13	Lockout/Tagout	Mesa	Joe Gates	602-542-1641
October 18	Hazard Communication	Peoria	Fernando Mendieta	602-542-1640
October 18	Construction Hazard Recognition	Tucson	Mark Norton	520-628-5478
October 18	Fall Protection	Buckeye	Joe Gates	602-542-1641
October 19	Back Injury Prevention	Yuma	Fernando Mendieta	602-542-1640
October 20	Electrical Safety	Tucson	Carlos Rodriguez	520-628-5478
October 20	Bloodborne Pathogens	Yuma	Fernando Mendieta	602-542-1640
October 25	Forklift Train-the-Trainer	Phoenix	Joe Gates	602-542-1641
October 26	Fall Protection (AM class)	Lake Havasu	Joe Gates	602-542-1641
October 26	Scaffold Safety (PM class)	Lake Havasu	Joe Gates	602-542-1641
October 28	Hazard Communication	Cottonwood	Fernando Mendieta	602-542-1640
October 28	Violence Prevention	Cottonwood	Fernando Mendieta	602-542-1640
November 2	Forklift Train-the-Trainer	Tucson	Bill Garton	520-628-5478
November 3	Safety Management	Tucson	Mark Norton	520-628-5478
November 3	Hazard Communication	Mesa	Fernando Mendieta	602-542-1640
November 3	Forklift Train-the-Trainer	Flagstaff	Joe Gates	602-542-1641
November 8	Excavation Safety Awareness	Peoria	Joe Gates	602-542-1641
November 9	Hand & Power Tool Safety	Tucson	Carlos Rodriguez	520-628-5478
November 9	OSHA in the Medical Office	Phoenix	Fernando Mendieta	602-542-1640
November 10	Back Injury Prevention	Tucson	Tom Webb	520-628-5478
November 10	Back Injury Prevention	Avondale	Fernando Mendieta	602-542-1640
November 15	Forklift Train-the-Trainer	Tucson	Carlos Rodriguez	520-628-5478
November 16	Machine Guarding	Tucson	Mark Norton	520-628-5478
November 16	OSHA 300 Recordkeeping	Yuma	Joe Gates	602-542-1641
November 17	Scaffolding Safety	Tucson	Bill Garton	520-628-5478
November 17	Forklift Train-the-Trainer	Yuma	Joe Gates	602-542-1641
November 22	Safety Management	Phoenix	Joe Gates	602-542-1641
November 22	Confined Space Entry	Peoria	Fernando Mendieta	602-542-1640
November 29	Noise/Hearing Conservation	Prescott	Fernando Mendieta	602-542-1640
November 29	Welding Safety	Phoenix	Joe Gates	602-542-1641
December 1	Excavation Safety Awareness	Tucson	Mark Norton	520-628-5478
December 1	Excavation Safety Awareness	Prescott	Joe Gates	602-542-1641
December 6	Electrical Safety	Phoenix	Joe Gates	602-542-1641
December 7	Forklift Train-the-Trainer	Tucson	Bill Garton	520-628-5478
December 7	Electrical Safety	Buckeye	Joe Gates	602-542-1641
December 8	Bloodborne Pathogens	Tucson	Mark Norton	520-628-5478
December 13	OSHA 300 Recordkeeping	Phoenix	Joe Gates	602-542-1641
December 13	OSHA 300 Recordkeeping	Tucson	Mark Norton	520-628-5478
December 14	Lockout/Tagout	Tucson	Tom Webb	520-628-5478
December 14	Personal Protective Equipment	Phoenix	Fernando Mendieta	602-542-1640
December 14	Construction Safety Mgmt	Yuma	Joe Gates	602-542-1641
December 15	Fall Protection	Tucson	Carlos Rodriguez	520-628-5478
December 15	Hand & Power Tool Safety	Yuma	Joe Gates	602-542-1641
December 20	Respiratory Protection	Peoria	Fernando Mendieta	602-542-1640

Trainers may be contacted by e-mail by using the following format: <lastname>.<firstname>@dol.gov

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dards for motor vehicles and motor vehicle equipment, and through grants to state and local governments to enable them to conduct effective local highway safety programs. Their

website is: www.nhtsa.dot.gov.

As you consider the safety of your employees, please take the time to consider those employees who are on the Arizona roads as a part of their

work. Let's keep them safe too.

Adapted from an article in MIOSHA News, with permission.

Occupational Fatalities Investigated by ADOSH April 1, 2005 through June 30, 2005

- 1) An employee was crushed by three large bales of hay that fell from a trailer being loaded.
- 2) An employee was killed from an explosion that resulted when he used a saw to cut into a metal drum that contained flammable liquid residue.
- 3) An employee fell eight feet from a residential home, sustaining fatal injuries.
- 4) An employee was killed when he was run over by a front-end loader.
- 5) An employee was crushed when a tractor attachment fell on him.

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